

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The final Office Action of February 2, 2004 has been received and contents carefully reviewed.

By this Amendment, Applicants amend claims 11 and 23. Accordingly, claims 1-26 are currently pending in the present application. Reexamination and reconsideration of the application are respectfully requested.

In the Office Action, the Examiner rejected claims 11-18, 23, 24 and 25 under 35 U.S.C. § 112 ¶2; rejected claims 1, 2, 7, 10, 11, 13, 14, 17-22, 25 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Nelson (U.S. Pat. No. 4,147,581) in view of Chung et al. (U.S. Pat. No. 5,000,795), Kanda (U.S. Pat. No. 4,338,157) and Allies et al. (U.S. Pat. No. 5,560,838); rejected claims 3-6, 8, 9, 12, 15, 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al., and further in view of Jones et al. (U.S. Pat. No. 3,869,313); rejected claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al., and further in view of Tittle (U.S. Pat. No. 4,886,590). Applicants respectfully traverse these rejections.

Claims 11 and 23 have been amended solely for the purpose of expediting the prosecution of the present application. Accordingly, the rejection of claims 11-18, 23, 24 and 25 under 35 U.S.C. § 112 ¶2 is now believed to be moot. Applicant respectfully submits that claims 11-18, 23, 24 and 25 are in full compliance with 35 U.S.C. § 112 ¶2.

The rejection of claims 1, 2, 7, 10, 11, 13, 14, 17-22, 25 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al. is respectfully traversed and reconsideration is requested. Claim 1 is allowable over the cited references in that claim 1 recites a combination of elements including, for example, "a second tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material; a connecting passage directly connecting the first and second tanks and directly transferring the separated diluted etchant from the second tank to the first tank; an outlet pipe attached to the second tank, the outlet pipe discharging the residue material..." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed

invention. Accordingly, Applicants respectfully submit that claim 1 and claims 2, 7 and 19, which depend therefrom, are allowable over the cited references.

In the Office Action on page 3, the Examiner states, “The solids (residue materials) are removed from an etcher (“etch bath”) (2) via a stream (3) which passes into a rinse chamber (a second tank; 4; Fig. 1; col. 4, lines 49-68) including outlet pipe (6; column 4, lines 55-57).” Applicants respectfully submit that to establish a prima facie case of obviousness under 35 U.S.C. § 103, the prior art references when combined must at least teach or suggest all the claim elements. As best understood, “the solids” that the Examiner is referring to as residue materials are actually the subject to be etched, not a residue material. See Nelson Col. 4, lines 36-57. Accordingly, Applicants respectfully submit that none of the references including Nelson teaches or suggests at least this feature of claim 1.

Claim 10 is allowable over the cited references in that claim 10 recites a combination of elements including, for example, “a control unit controlling the etch bath, the control unit connected to the temperature sensor for receiving a signal indicating a temperature of the etchant to terminate the etching when the temperature of the etchant reaches a termination temperature.” None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 10 and claim 20, which depends therefrom, are allowable over the cited references.

In the Office Action on page 4, the Examiner states, “Kanda specifically teaches a control unit (45, 47-57; Figure 10; column 9, line 12 – column 10, line 47) for receiving a signal indicating the temperature (T) of the etchant from a temperature sensor (“thermocouple”) and transmitting an etching termination signal ($P \approx 0$) to the etch bath when the temperature reaches a target temperature.” Applicants respectfully disagree. Unlike the instant application, there is no “target temperature” in Kanda, which is relative to an initial temperature of the etchant, since the measured temperatures in Kanda are only used to compensate the differences of the etching rate at various temperatures to precisely determine the end point of the etching. See Kanda Col. 9, line 12 – Col. 10, line 47.

Claim 11 is allowable over the cited references in that claim 11 recites a combination of elements including, for example, “a separation tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material using the weight of the residue

material, the separation tank directly transferring the separated diluted etchant to the first tank... wherein an etched thickness of the glass substrate is derived from the temperature of the first etchant, and wherein the total reaction energy is used as a reference." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 11 and claims 13, 14, 17, 18 and 25, which depend therefrom, are allowable over the cited references.

Claim 21 is allowable over the cited references in that claim 21 recites a combination of elements including, for example, "a second tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material; a connecting passage connecting the first and second tanks directly transferring the separated diluted etchant from the second tank to the first tank; an outlet pipe attached to the second tank discharging the residue material; and a control unit controlling the first tank, the etch bath and the second tank, the control unit terminating the etching when a temperature of the first etchant reaches a termination temperature." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 21 is allowable over the cited references.

Claim 22 is allowable over the cited references in that claim 22 recites a combination of elements including, for example, "a control unit controlling the etch bath, the control unit connected to the temperature sensor for receiving a signal indicating a temperature of the first etchant to terminate the etching when the temperature of the first etchant reaches a termination temperature..." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 22 is allowable over the cited references.

Claim 26 is allowable over the cited references in that claim 26 recites a combination of elements including, for example, "a second tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material using gravity of the residue material; a connecting passage connecting the first and second tanks for transferring the separated diluted etchant from the second tank to the first tank; an outlet pipe attached to the second tank, the outlet pipe discharging the residue material" None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly,

Applicants respectfully submit that claim 26 is allowable over the cited references.

The rejection of claims 3-6, 8, 9, 12, 15, 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al., and further in view of Jones et al. is respectfully traversed and reconsideration is requested. Applicants respectfully submit that, as discussed with respect to claims 1 and 11, since Jones et al. fails to cure the deficiencies of the references including Nelson, Chung et al., Kanda and Allies et al., claims 3-6, 8, 9, 12 and 15 are allowable.

Claim 23 is allowable over the cited references in that claim 23 recites a combination of elements including, for example, "a separation tank receiving the residual etchant from the etch bath separating the diluted etchant from the residue material using the weight of the residue material, the separation tank directly connected to the etch bath via an etchant outlet pipe, the separation tank directly transferring the separated diluted etchant to the first tank..." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 23 and claim 24, which depends therefrom, are allowable over the cited references.

The rejection of claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al., and further in view of Tittle is respectfully traversed and reconsideration is requested. Applicants respectfully submit that, as discussed with respect to claim 11, since Tittle fails to cure the deficiencies of the references including Nelson, Chung et al., Kanda and Allies et al., claim 16 is allowable.

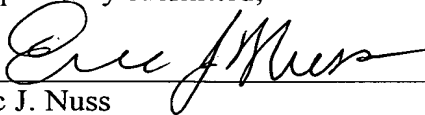
Applicants believe the foregoing amendments place the application in condition for allowance and early, favorable action is respectfully solicited. If the Examiner deems that a telephone conference would further the prosecution of this application, the Examiner is invited to call the undersigned attorney at the telephone number (202) 496 - 7500. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the

filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

Dated: April 30, 2004

Respectfully submitted,

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Claim 23 is allowable over the cited references in that claim 23 recites a combination of elements including, for example, "a separation tank receiving the residual etchant from the etch bath separating the diluted etchant from the residue material using the weight of the residue material, the separation tank directly connected to the etch bath via an etchant outlet pipe, the separation tank directly transferring the separated diluted etchant to the first tank..." None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 23 and claim 24, which depends therefrom, are allowable over the cited references.

The rejection of claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung et al., Kanda and Allies et al., and further in view of Tittle is respectfully traversed and reconsideration is requested. Applicants respectfully submit that, as discussed with respect to claim 11, since Tittle fails to cure the deficiencies of the references including Nelson, Chung et al., Kanda and Allies et al., claim 16 is allowable.

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